

Opekiska Pool Study Monongahela River

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Abstract

Project Background

Underground coal mines on the west side of the Monongahela River have mined out hundreds of thousands of acres. While these mines are active, they must pump and treat water to keep the mines dry. Coal companies installed treatment facilities in the mid 70's to treat mine water, and this resulted in a dramatic improvement in the quality of the River. For example, the pH at Morgantown went from the low 4's to the mid 7's as these treatment units went on line. Many of those mines closed in the mid to late 1990's and their water treatment facilities have been shut down. The mines are now flooding and as the water levels rise in the mines the barriers between mines are stressed with increasing pressure. The many characteristics of connections between mines, both horizontally and vertically, become important factors in determining how large a mine pool will become and whether it will discharge to the surface.

An example of this occurrence is the "Fairmont Pool" located just north of Fairmont, WV, covering 27,000 acres. This pool was blamed for discoloration of Buffalo Creek in October 1996 and officials took action to avoid other discharges from boreholes as the pool level continued to rise. A siphon was installed in early 1997 to drain the "Fairmont Pool" mine water to an adjacent mine pool that could be pumped and treated by one of the large mine drainage treatment facilities which had recently been shut down. The "crisis" continues to be kept under control by this stop-gap measure.

There is a series of underground mine pools forming in the abandoned Pittsburgh Coal mines from Fairmont to Pittsburgh. These mines are generally west of the Monongahela River and dip to the west. The impact on the Monongahela will be felt as the water in these pools reaches a discharge level. The mainstem is impacted by two significant permitted discharges, that of the Fairmont sewage treatment facility and that of the Monongahela Power Company's coal fired power plant discharges. Some tributaries of the Monongahela are impacted by coal mine discharges and sewage overflows, while others are good quality streams.

Because there is a need to study surface water to complement the groundwater studies, several agencies have come together to outline a study plan. These agencies include Office of Surface Mining (OSM), Federal Energy Technology Center (FETC), United States Geological Survey (USGS), National Mine Land Reclamation Center (NMLRC), West Virginia Department of Environmental Protection (WVDEP), United States Army Corps of Engineers (USACE), and Environmental Protection Agency (EPA).

Objectives

Data collection and reporting will follow EPA standard operating procedures for stream sampling. The accuracy and precision shall be sufficient to evaluate compliance with stream water quality criteria, appropriate stream water uses, and computer models accuracy in predicting stream water quality. Finalized data will be stored in STORET or its successor for public access.

All data will be subject to peer review by the design team as well as the Quality Assurance/Quality Control Officer for meeting quality objectives.

Project Procedure and Organization

Team Leader - USEPA

Flow Data - USGS

Riverbed Characteristics - USACE

Periodic Monitoring of Chemistry & Flow - OSM, EPA, & WVDEP

Stream quality assessment surveys - WVDEP & EPA

Low flow profiling of Opekiska Pool - USACE

Stream Chemistry Analysis - FETC

Computer Modeling - FETC & EPA TMDL staff

This project will monitor and develop a model of stream water quality in the Opekiska Pool of the Monongahela River. Data will include monthly sampling of selected stream stations on the tributaries and the mainstem for mine drainage parameters. WVDEP will also include these stream monitoring points as part of their ongoing effort assessing the current quality of watersheds across WV. The US Army Corps of Engineers will conduct their yearly survey of water quality in the Opekiska Pool during low flow conditions. Additional data will be available from the long term ambient monitoring from the Star City Bridge station and other monthly stream samples collected from the Opekiska Pool. WVDEP will conduct a chemical and biological survey of Flaggy Meadow Run. FETC contractors have already conducted thermal surveys of the lower five miles of Buffalo Creek, Paw Paw Creek, and the West Fork River. All these data will be shared with OSM and FETC for use in modeling groundwater and surface water at the Opekiska Pool area. The project will support efforts to scientifically establish effluent limits for facilities which treat water from flooded mines in this region and regions downstream.

Data will be collected using specified methodologies. For Flow Rate, USGS gages will be used on the Tygart Valley River at Colfax, on the West Fork River at Enterprise, on Buffalo Creek at Barracksville. The US Army Corps of Engineers flow values for gate openings will be used for the Opekiska Dam. Flow rate will be measured using area/velocity methodology at the sample locations on Paw Paw Creek, Indian Creek, Prickett Creek, and Whiteday Creek. Stream chemistry sampling and analyses will follow EPA protocol for ambient streams and the laboratories will be certified by WVDEP. Whenever feasible, streams shall be sampled at quarter points across the stream width and composited into a single sample. Finally, aquatic biology sampling and analysis will follow EPA's Rapid Bioassessment Protocol methodology.